VARD Opticote SURFACE

for

Increasing Light Transmission
Reducing Light Reflection

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Lenses • Diffusion Discs • Prisms • Telescopes • • Binoculars • Telescopic Sights • Camera Lenses • • Projection Lenses • Microscopes and many other optical surfaces.

Opticote

VARD Opticote SURFACE

One of the most interesting developments within recent years in the optical field is the new process of treating transparent materials to reduce reflections and increase light transmission.

There will be wide application for the process, but of immediate and exciting interest are the results being obtained with treated camera and projection lenses.

It is well-known that as a beam of light falls on a glass-air surface four or five per cent of the light is lost by reflection at each surface. Thus, the light emerging from any lens is less than the light falling on the lens by the amount lost in reflection. The loss by reflection takes place each time the light beam passes from air to glass and also when it passes from glass to air (hence, the use of the term "glass-air" surface). In the case of a complex lens system i.e. several elements with several glass-air surfaces, the loss by reflection is cumulative and results in a considerable loss of light. In a camera lens, much of the light lost by reflection on the inner elements is re-reflected, finally finding its way to the film, not as useful light, but as flare and stray light, whose effect is to produce fog and impair contrast.

Treated lenses show many improvements. The effective speed of the lenses is increased, and resolving power, photographic brilliance, contrast and image quality are improved. Correspondingly, as shown by tests of a major motion picture company, a treated camera lens will permit making pictures with usual illumination with a reduction of one-half to three-quarters of a stop smaller diaphragm with resulting increased depth of field, or, maintaining usual stops, permit less illumination. Treated projection lenses step up screen illumination between 15 and 40 per cent depending upon type and construction of lens.

The process of treating the transparent materials involves the evaporation and recondensation, in extremely high vacuum, of certain mineral substances that have the proper optical and physical properties. The effect of the film is to divide the reflected light into two parts, which are out of phase, and tend to cancel out or neutralize each other.

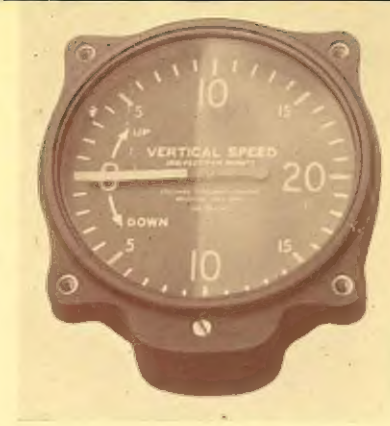
Proper control and technique have made it possible to reduce reflection losses by as much as 75 per cent and yet obtain a practical treatment that will withstand ordinary careful use.

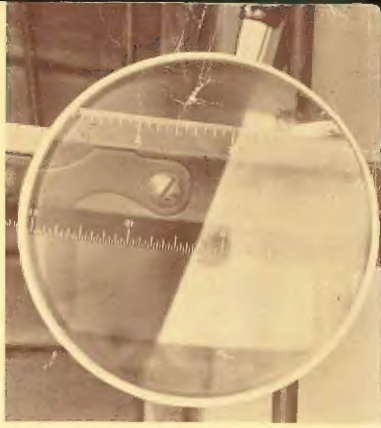
The treatment can be readily applied to any existing lens system to advantage. In a simple system involving few glass-air surfaces the improvement is good and in the more involved system with many glass-air surfaces, the increase in all around performance is truly remarkable.

VARD MECHANICAL LABORATORY has had experience in high vacuum evaporation and recondensation work for several years and is well equipped and technically proficient to engage in this exacting work. Our technicians are in regular consultation with DR. JOHN STRONG, who discovered and developed this particular method of treating transparent materials.

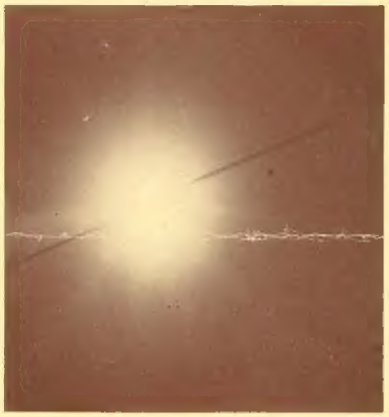
Opticote

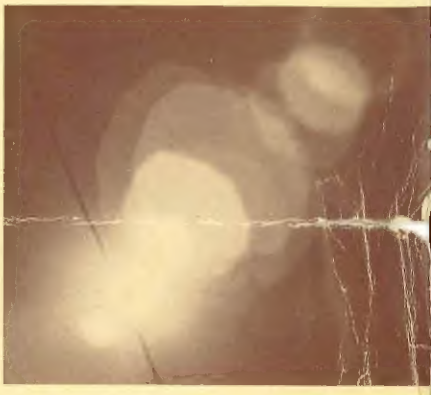
Unretouched photographs of an airplane instrument and a simple magnifying glass, the glasses of which have been treated over one-half their area.





Unretouched photographs taken with two identical Astro Pan Tachar lenses. The photo on the left was taken with the treated lens; the one on the right with the untreated lens.





There are many applications for the process, in fact wherever reduction of reflections and increase of light transmission is desirable. Microscopes, telescopic sights, bomb sights, cover glasses for instruments, filters, diffusion discs, prisms and camera and projection lenses are but a few items that gain benefit from treatment.

VARD *Reflecticote* SURFACE

The technique of evaporation and recondensation of metallic substances has developed rapidly over the last few years. It is now possible to coat glass, and other materials with polished surfaces suitable for mirror bodies, with aluminum, aluminum alloys, etc. to produce a thin, even and very efficient reflecting surface.

Surfaces thus treated are practically untarnishable, durable and have high coefficients of reflection. The limitations of silver as a reflecting surface have long been recognized. Silver is soft; it tarnishes rapidly; in certain regions of the spectrum its coefficient of reflection is not high.

With the Reflecticote technique, it is also possible to partially coat surfaces in a manner that allows a percentage of light to be transmitted through the mirror and a percentage of light reflected. Such surfaces are principally used for prisms and "beam splitter" mirrors used in color camera work.

The demand for superior reflecting qualities gives rise to a variety of applications. Many types of lamps and projection reflectors, oscillographs, galvanometer and telescope mirrors, stereoscope and opthalmic mirrors, color camera equipment, even ordinary shaving and make-up mirrors; all are improved by REFLECTICOTE surfaces.

Consult with us on your problems. Our charges are reasonable; our abilities and technique are recognized and the quality of our work is superior.

VARD MECHANICAL LABORATORY ▼ BRAY CORPORATION (Sales Agent)

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